

REMARKS

Figure 2 has been added. The specification has been amended to provide a brief description of the drawings, in addition to specification section headings. Claim 10 has been cancelled. Claims 1, 2, 4, 6, 7, 8, 11, 12, 13, 15,16 and 17 have been amended. Claims 1-9 and 11-17 remain pending in this application.

The drawings have been objected to under 37 C.F.R. § 1.83(a) on the basis that Fig. 1 does not show the rim of the porous plate supporting a dense layer of electrostatic material. New Fig. 2 has been added to depict this feature of the invention, which is described on page 4 of the specification. No new matter has been added.

Claim 11 stands objected to under 37 C.F.R. 1.75(c). Claim 11 has been amended to depend from claim 5. In light of this amendment, Applicant submits that claim 11 is in proper form.

Claim 17 stands objected to because of informalities. Claim 17 has been amended to recite a structural limitation, namely “the porous structure is impregnated with a catalyst.” In light of this amendment, Applicant submits that claim 17 is in proper form.

Claim 12 stands rejected under 35 U.S.C. § 112, first paragraph. Claim 12 depends from claim 4, which recites “a dense layer of electrolyte material.” In the original disclosure (page 4, lines 9, 13 and 26), the electrolyte layer is described as dense. The disclosure also states that “the dense layer may be based on mixed oxide ceramic materials.” (Page 5, lines 30-31). Claim 12 has been amended to recite that “the dense layer is a ceramic layer.” In light of this amendment, Applicant submits that claim 12, as amended, recites subject matter described in the specification, and respectfully requests reconsideration of this rejection.

Claim 4 stands rejected under 35 U.S.C. § 112, second paragraph. Claim 4 has been amended to recite that the anode layer is “covered by a dense layer of electrolyte material.” In light of this amendment made in accordance with Examiner’s guidance,

Applicant submits that claim 4 is clear and definite, and respectfully requests reconsideration of this rejection.

Claim 1, 9 and 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by JP 08-037011-A (JP '011). Reconsideration is respectfully requested.

The abstract of JP '011 recites "a fuel cell base board in hollow flat plate form" having a "plurality of oxidator gas passages 11 [] provided in a porous support 9, which, is covered with an electrode material 10." The purpose is stated as maintaining high gas tightness by covering the gas passage formed in the porous support with the electrode material. The drawing indicates that the porous support is covered all over with the electrode material, and *not on one surface only*, as shown by the dotted surface of the drawing. This implies an overall coverage of the gas passages by the electrode material, which is contrary to amended claim 1, which recites "a porous metal and/or metal alloy plate structure supporting *on one planar surface* a layer of anode active material and with internally elongated fuel gas supply channels formed inside the structure." (Emphasis added).

The abstract of JP '011 also states that the passages in the porous support are oxidator gas passages, i.e. passages for oxidant gas, which is oxygen in a solid oxide fuel cell. The passages of JP '011 are therefore related to the cathode layer. In the solid oxide fuel cell of the present invention, this is not the case. In the present invention, as recited in amended claim 1, the gas passages are integrated with the cell support and the *anode* layer, and the gas passages in the porous plate structure are exposed to reducing gas conditions under fuel cell operation. (Specification, page3, lines 17-19; page 4, lines 25-30). Therefore, amended independent claim 1, and its dependent claims 9 and 10, are submitted to be allowable over the prior art of record.

Claims 1-4, 6, 7, 9-12 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by JP 03-055764-A (JP '764). Reconsideration is respectfully requested.

The drawing of JP '764 shows that the planar support 1A having oxygen gas supply channels 2A is placed relative to the oxidizing agent electrode 3, i.e. the cathode. The abstract recites a "single cell 16 having an oxidizing agent electrode 3 and a fuel electrode provided [on] the respective surfaces of a solid electrolytic body 4." The electrolytic body 4 is the electrolyte layer and the fuel electrode must therefore be the layer 5, which constitutes the third component of a single cell. Fuel electrode layer 5 is placed relative to the layer of nickel felt 14A. In contrast, the fuel cell of amended independent claim 1 of the present invention has a planar support with channels for fuel gas in connection with the anode, as emphasized above.

Furthermore, the abstract of JP '764 does not disclose that the separator layer 6A is gas impermeable, electronically conductive, ceramic or metallic, as recited in dependent claims 2-4, 6, 7, 9-12 and 15. Therefore, amended independent claim 1, and its dependent claims 2-4, 6, 7, 9-12 and 15, should be considered allowable over the prior art of record.

Claims 1-17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,589,286 (Iwata). Reconsideration is respectfully requested.

Iwata discloses a fuel cell following a principle similar to that of JP '011 and JP '764 above. Iwata discloses that the ports, represented by 118, carry oxidant gas, the electrolyte is represented by 116B, the anode by 116C and the cell substrate 116A, which contains the oxidant gas ports 118, serves by itself as a cathode. (Fig. 7; Col. 7, lines 51-63). Therefore, the passages 118 are related to the *cathode*, which is contrary to the solid oxide fuel cell of the present invention, which provides a porous plate structure integrated with the *anode* layer, as emphasized above.

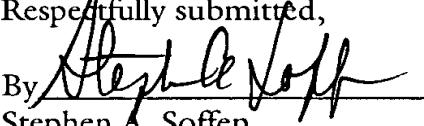
Moreover, the cell substrate 116A with the oxidant flow channels 118 of Iwata is prepared from lanthanum perovskite complexes such as lanthanum manganite or lanthanum chromite. (Col. 7, lines 31-35). These materials are not metal alloys, but rather, they are ceramic materials in the form of oxides of the elements. Claim 1 has been

amended to recite "a planar support in form of a porous metal and/or metal alloy plate structure supporting on one planar surface a layer of anode active material and with internally elongated fuel gas supply channels formed inside the structure." These metals are not converted to the oxide form at the operating conditions of the fuel cell and therefore do not correspond to the perovskite complexes disclosed by Itawa. Therefore, amended independent claim 1, and its dependent claims 2-17, are submitted to be allowable over the prior art of record.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Dated: September 4, 2003

Respectfully submitted,

By 
Stephen A. Soffen

Registration No.: 31,063
DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP
2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorney for Applicant

Attachments